

Fig. 1

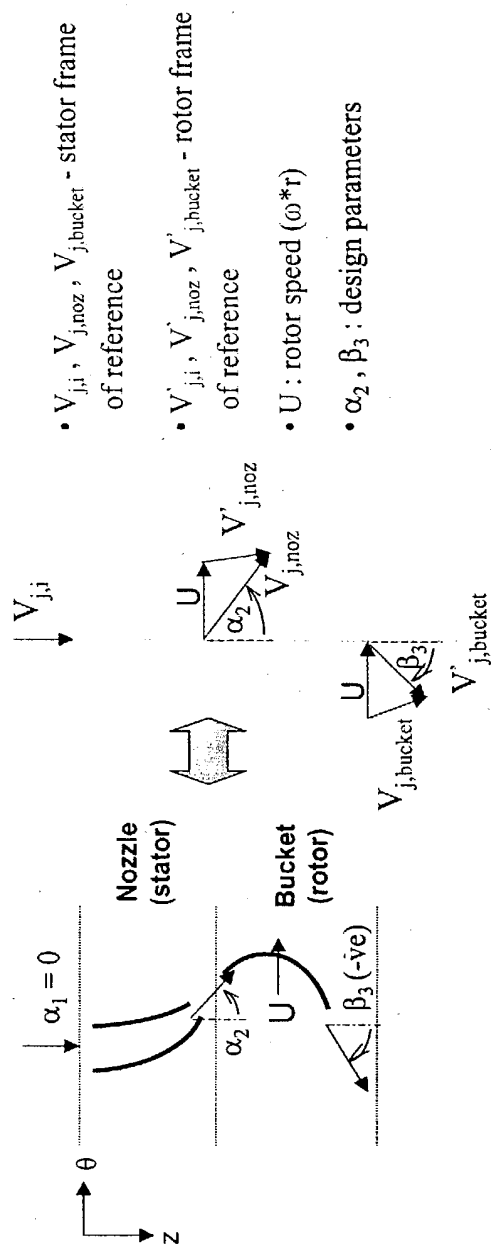


Fig. 2

- $V_{j,i}, V_{j,noz}, V_{j,bucket}$  - stator frame of reference
- $V'_{j,i}, V'_{j,noz}, V'_{j,bucket}$  - rotor frame of reference
- $U$  : rotor speed ( $\omega \cdot r$ )
- $\alpha_2, \beta_3$  : design parameters

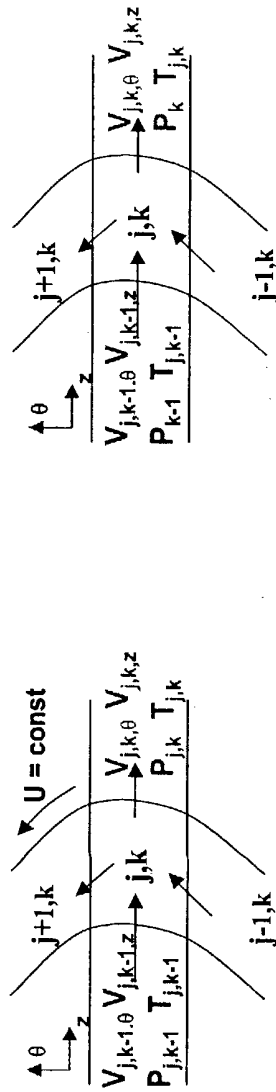


Fig. 3

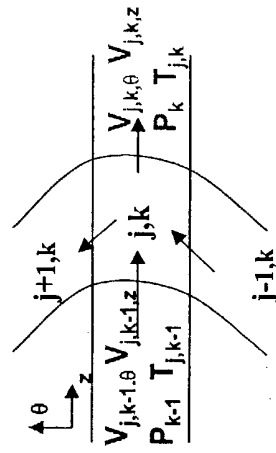


Fig. 4

Measurement											Model		
MW	CPD (psig)	CPD (psia)	CPDa (atm)	CPR (calc)	TTRF (F)	TTPA (F)	CTD (F)	IGV (deg)	Swirl (deg)	Tmp@peak (F)	Tmp@rough (F)	TTRF (F)	
69.7	195.2	209.63	14.26	14.53	2365	1110	694	84.2	83.9	2485	2235	2367	
65	191	205.43	13.98	14.24	2310	1031	686	83.9	83.9	2430	2180	2311.9	
60.1	179.2	193.63	13.18	13.42	2299	1027	670	75.6	81.4	2418	2168	2299.8	
55.1	168.9	183.33	12.47	12.70	2286	1102	659	68.4	83.6	2405	2155	2286	
50	156.8	171.23	11.65	11.87	2277	1119	643	61.9	81.6	2395	2145	2276.8	
45	145.6	160.03	10.89	11.09	2250	1128	633	56.7	89.9	2370	2120	2251.7	

Fig. 5

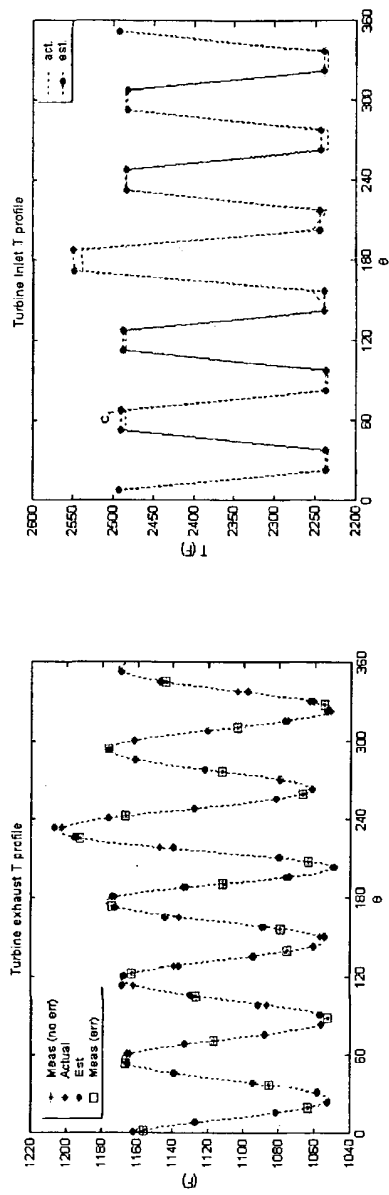


Fig. 6(b)

Fig. 6(a)

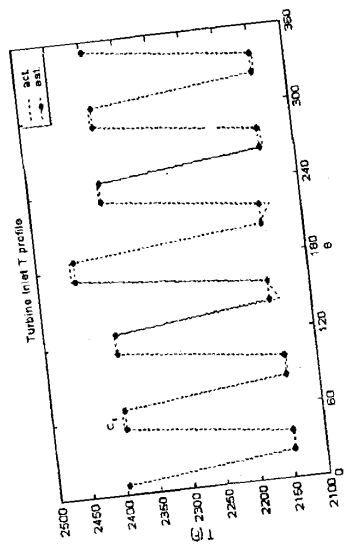


Fig. 7(b)

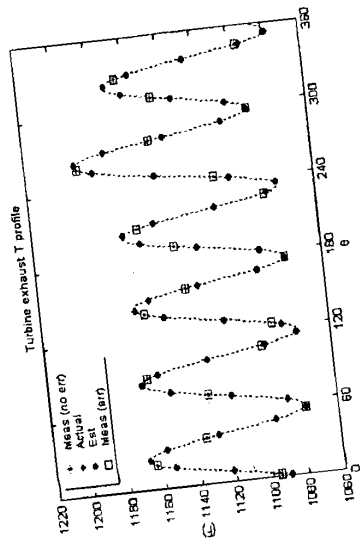


Fig. 7(a)

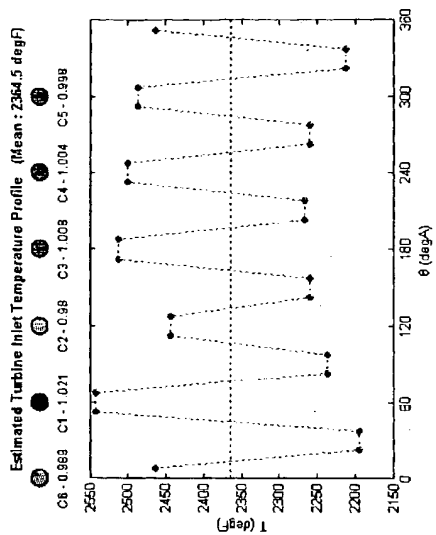


Fig. 8(b)

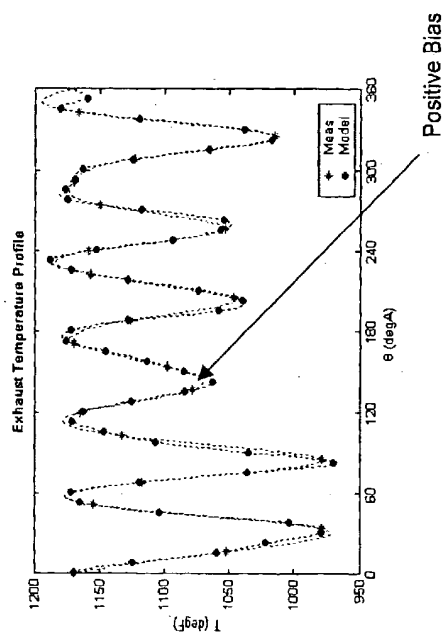


Fig. 8(a)

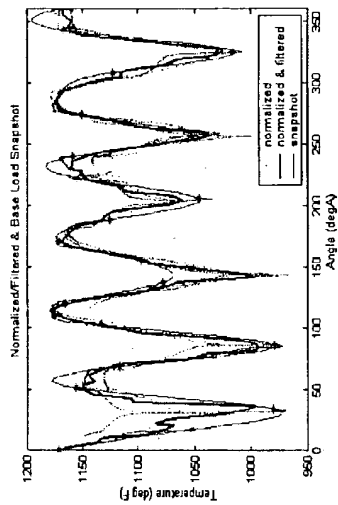


Fig. 9

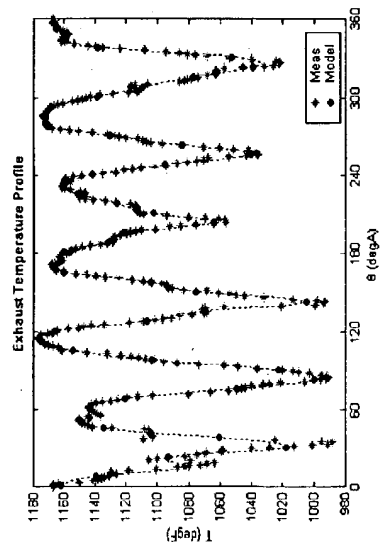


Fig. 10(a)

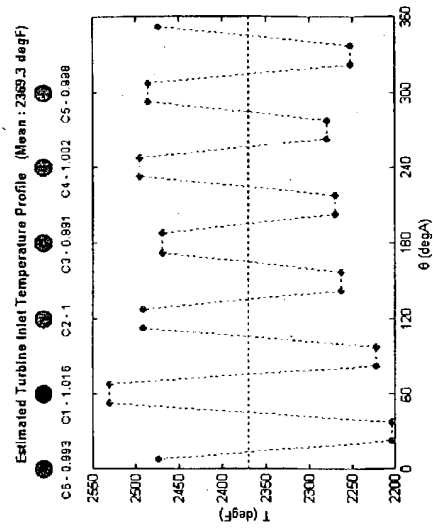


Fig. 10(b)